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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,532	03/03/2004	Yi-Lin Lai	82556	3370
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/791,532

Applicant(s)

LAI ET AL.

Examiner

LaTanya Bibbins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In the remarks filed on February 14, 2007, Applicant amended claims 1, 6-14, added claims 15-17, and submitted arguments for allowability of pending claims 1-17.

Response to Amendment

2. The amendment filed February 14, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

"The terms "n1," "n2," "n3," and "n4" refer to independent integers of any value including zero," added to the first full paragraph of page 11 of the specification.

While the Examiner indicated the interpretation of the variables n1, n2, n3, and n4 on page 4 of the previous office action, the examiner did not propose an amendment to the specification as indicated on page 15 of Applicants Remarks. Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

3. Applicant's arguments filed February 14, 2007 have been fully considered but they are not persuasive.

Regarding claims 1-6, 8-11, and 13-16, Applicant argues that the claimed RPDefect means/step and the claimed DSPDefect means/step are not disclosed in the prior art references. However, the means plus function language indicates that

applicant intends to invoke 35 U.S.C. 112 paragraph six. Where means plus function language is used, claim limitations are interpreted to read on only the corresponding structure disclosed in the specification and equivalents thereof. The Examiner maintains that a means for both RPDefect detection and DSPDefect detection are provided in Song Figure 2 elements 36 and 32 where the means for defect detection are the comparators and defect controller. Further in column 3 lines 44-46 where additional comparators may be added to accommodate additional defect detection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 7, 12, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 7, 12, and 17 recite variables n1, n2, n3, and n4. A definition of the variables n1, n2, n3, and n4 is not provided in either the claim or the specification and therefore one of ordinary skill in the art would not be able to determine the definition of the variables. In the interest of compact prosecution, the examiner will interpret variables n1, n2, n3, and n4 as any integer including zero.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 3-6, 8-11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (US Patent Number 6,862,088 B2) and further in view of Tsai et al. (US PGPub Nuber 2002/0172111 A1).**

Regarding claim 1, Song teaches a device for detecting a signal on a defect disc, said device comprising: a servo control unit handling related electromechanical devices of said device (column 3 lines 62-65 and Figure 2 element 32); a preamplifier receiving data from a lens and generating an RF signal for data process, servo control signals for said servo control unit and various signals for defect detection; (see the preamplifier and conditioning circuit of Figure 1 element 26 and column 2 lines 42-47); a slicer receiving and digitalizing said RF signal so as to generate digitalized RF signal (see the analog-to digital converter in Figure 1 element 30 and column 3 lines 24-28); a defect detection unit receiving said various signals for detecting different kinds of defects to set corresponding defect flag signals (Figures 1 and 2 elements 36 and 32 and column 3 lines 41-61 and further in column 4 lines 25-32 where the comparator will set a "defect flag" upon detecting a defect), wherein said defect detection unit includes means for ADefect1 detection, means for EFMD defect detection, means for RPDefect detection, means for Interruption detection, means for ADefect detection, and means for

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DSPDefect detection (see Figure 2 elements 36 and 32 where the means for defect detection are the comparators and defect controller, further in column 3 lines 44-46 where additional comparators may be added to accommodate additional defect detection); a logic combination unit running a suitable logic operation on said defect flag signals for detecting a particular defect (see the defect controller in Figure 2 element 50 and discussion in column 5 lines 5-16). Song, however, fails to teach a phase lock loop and a decoder.

Tsai, on the other hand, teaches a phase lock loop (PLL) synchronizing said digitalized RF signal to a system clock and counting the length of said digitalized RF signal (Figure 1 element 16 and paragraphs [0018] and [0023]); and a decoder decoding the length of said digitalized RF signal to a host (Figure 1 element 110 and paragraph [0019]);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the PLL and decoder of Tsai into the optical disk drive apparatus of Song. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to produce a device that protects synchronizing patterns when defects occur on discs (see Tsai paragraph [0002]).

Regarding claim 3, Song and Tsai teach the device according to claim 1, wherein said servo control signals further includes a focusing error (FE) signal and a tracking error (TE) signal (see Song Figure 1 elements 28a, 28b).

Regarding claim 4, Song and Tsai teach the device according to claim 1 wherein said various signals at least include an envelope signal of said RF signal (see the preamplifier and conditioning circuit in Figure 1 element 26 and column 2 lines 44-46).

Regarding claim 5, Song and Tsai teach the device according to claim 1, wherein said defect detection unit further receives eight to fourteen modulation (EFM) signals from said slicer and said PLL (see Tsai paragraphs [0017] and [0018]).

Regarding claim 6, Song and Tsai teach the device according to claim 4, wherein said means for ADefect1 detection compares said envelope signal with a first threshold level, which is higher than an ADefect detection level, and sets a first corresponding flag signal when said envelope signal is lower than said first threshold level (see Song column 3 lines 47-61 where the comparator compares the signal to a reference level and generates an output signal).

Regarding claim 8, Song and Tsai teach the device according to claim 1, wherein said means for RPDefect detection compares an RFRP signal with an RPDefect threshold level, which is higher than an ADefect detection level, and sets a third corresponding flag signal when said RFRP signal is lower than said RPDefect threshold level, wherein said RFRP signal is a peak envelope, a bottom envelope, or a peak-to-bottom envelope of said RF signal (see Song column 3 lines 47-61 where the comparator compares the signal to a reference level and generates an output signal).

Regarding claim 9, Song and Tsai teach the device according to claim 4, wherein said means for Interruption detection compares said envelope signal with an

interruption threshold level, and sets a fourth corresponding flag signal when said envelope signal is higher than said interruption threshold level (see Song column 3 lines 47-61 where the comparator compares the signal to a reference level and generates an output signal).

Claims 10, 11, 13, and 14 are drawn to the method of using the corresponding apparatus claimed in claims 1, 6, 8, and 9. Therefore method claims 10, 11, 13, and 14 corresponding to apparatus claims 1, 6, 8, and 9 are rejected for the same reasons of obviousness as used above.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (US Patent Number 6,862,088 B2) and Tsai et al. (US PGPub Nuber 2002/0172111 A1) as applied to claim 1 above, and further in view of Kim (US PGPub 2006/0250913 A1).

Regarding claim 2, Song and Tsai teach the device according to claim 1, wherein said related electromechanical devices include a spindle motor (Tsai Figure 1 element 12), and means for a lens slightly tracking and focusing move (see Song Figure 1 elements 28a, 28b, and 32 and the means for tracking and focusing is provided by the controller). Song and Tsai fail to teach a sled motor. Kim, however, teaches a sled motor (see Figure 1 element 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the sled motor taught by Kim into the optical disk device of Song and Tsai. One of ordinary skill in the art at the time the invention

was made would have been motivated to combine the teachings in order to provide a mechanism for moving the optical pick-up.

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (US Patent Number 6,862,088 B2) and Tsai et al. (US PGPub Number 2002/0172111 A1) and further in view of Chen (US PGPub 2003/0223335 A1)

Regarding claim 15, Song and Tsai disclose the device according to claim 1, but lacks the feature of claim 15. However, Chen discloses a defect detection circuit wherein said DSPDefect detection means compares an absolute difference of said RF signal and a frequency-domain filtered RF signal with a DSPDefect threshold level, and sets a DSPDefect flag signal when said absolute difference is greater than said DSPDefect threshold level (see Figure 5 and paragraphs [0020]-[0022]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the defect signal circuit as taught by Chen into the defect signal detection device of Song and Tsai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to allow for the "generation of accurate defect signals regardless of the length of the defect permitting a more complete and accurate disc defect management system" (Chen paragraph [0026]).

Claim 16 is drawn to the method of using the corresponding apparatus claimed in claim 15. Therefore method claim 16 corresponding to apparatus claim 15 is rejected for the same reasons of obviousness as used above.

Allowable Subject Matter

10. Claims 7 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

11. Claim 17 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

12. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 7, 12, and 17, none of the references of record, alone or in combination suggest or fairly teach a device or method for detecting a signal on a defect disc wherein said EFMDetect detection means includes comparing data length of each said EFM signal in a data frame with a first predetermined data length, and setting a second corresponding flag signal when more than n1 EFM signals have a length shorter than said first predetermined data length; comparing data length of each said EFM signal in said data frame with a second predetermined data length, and setting said second corresponding flag signal when more than n2 EFM signals have a data length longer than said second predetermined data length; **comparing data length of each**

said EFM signal in said data frame with a third predetermined data length, and setting said second corresponding flag signal when more than n_3 EFM signals have a data length longer than said third predetermined data length; and resetting said second corresponding flag signal after more than n_4 EFM signals have a data length that is between said first and said second predetermined data lengths; wherein said second predetermined data length is greater than said first predetermined data length, and said third predetermined data length is greater than said second predetermined data length in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

Although the prior art discloses comparing data lengths of EFM signals with a first and second predetermined data length where the second predetermined data length is greater than the first predetermined data length, the prior art fails to disclose comparing the data length of EFM signals with a third predetermined data length which is greater than a second predetermined data length (see Figure 2 and paragraphs [0021]-[0022] of Lai et al. US PGPub Number 2003/0091350 A1).

Citation of Relevant Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lai et al. (US PGPub Number 2003/0091350 A1) discloses a method for protecting a phase lock loop (PLL) in an optical. The method determines whether the currently reading data is erroneous and then maintain the frequency currently locked by

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the PLL circuit when the waveform lengths of the EFM signal in a detecting window contain at least one waveform length longer than 11T and at least one waveform length shorter than 3T. Otherwise, the PLL circuit will adjust the locked frequency according to the waveform length of the detected EFM signal so that the system clock frequency can be adjusted based on the locked one.

Conclusion

14. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LaTanya Bibbins



THANG V. TRAN
PRIMARY EXAMINER